

DTIC FILE COPY

AD-A228 031

USATHAMA

U.S. Army Toxic and Hazardous Materials Agency

Report of Sampling and Analysis Results Tappan Army Housing Units Tappan, New York



September 1990

DTIC
ELECTE
OCT 24 1990
S B D

Prepared for:

U.S. ARMY TOXIC AND
HAZARDOUS MATERIALS AGENCY
Aberdeen Proving Ground
Maryland 21010-5401

Prepared by:



DISTRIBUTION STATEMENT A

Approved for public release;
Distribution Unlimited

Under the supervision of:



Environmental Assessment and
Information Sciences Division
Argonne National Laboratory
Argonne, Illinois 60439

90 10 23 004

NOTICE

The views, opinions, and/or findings contained in this report are those of the author(s) and should not be construed as official Department of the Army position, policy, or decision unless so designated by other documentation.

The use of trade names in this report does not constitute an official endorsement or approval of the use of such commercial products. This report may not be cited for purposes of advertisement.

CETHA-BC-CR-90118

**Report of Sampling and
Analysis Results
Tappan Army Housing Units
Tappan, New York**

September 1990

Prepared for:

**U.S. Army Toxic and Hazardous Materials Agency
Aberdeen Proving Ground
Maryland 21010-5401**

Prepared by:



Under the supervision of:



**Environmental Assessment and
Information Sciences Division
Argonne National Laboratory
Argonne, Illinois 60439**

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED			1b. RESTRICTIVE MARKINGS			
2a. SECURITY CLASSIFICATION AUTHORITY			3. DISTRIBUTION/AVAILABILITY OF REPORT Distribution Unlimited			
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE						
4. PERFORMING ORGANIZATION REPORT NUMBER(S)			5. MONITORING ORGANIZATION REPORT NUMBER(S) CETHA-BC-CR-90118			
6a. NAME OF PERFORMING ORGANIZATION ROY F. WESTON, INC.		6b. OFFICE SYMBOL (If applicable)		7a. NAME OF MONITORING ORGANIZATION Environmental Assessment & Information Sciences Division Argonne National Laboratory (for USATHAMA)		
6c. ADDRESS (City, State, and ZIP Code) Roy F. Weston, Inc. Weston Way West Chester, PA 19380			7b. ADDRESS (City, State, and ZIP Code) Argonne National Laboratory 9700 S. Cass Avenue Argonne, IL 60439			
8a. NAME OF FUNDING/SPONSORING ORGANIZATION U.S. Army Toxic & Hazardous Materials Agency		8b. OFFICE SYMBOL (If applicable) CETHA-BC		9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER U.S. Department of Energy Contract W-31-109-ENG-38		
8c. ADDRESS (City, State, and ZIP Code) U.S. Toxic & Hazardous Materials Agency Attn: CETHA-BC Aberdeen Proving Ground, MD 21010-5401			10. SOURCE OF FUNDING NUMBERS			
			PROGRAM ELEMENT NO.		PROJECT NO.	TASK NO.
						WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification) UNCLASSIFIED Report of Sampling and Analysis Results: Tappan Army Housing Units Tappan, New York						
12. PERSONAL AUTHOR(S)						
13a. TYPE OF REPORT Final		13b. TIME COVERED FROM _____ TO _____		14. DATE OF REPORT (Year, Month, Day) September 1990		15. PAGE COUNT
16. SUPPLEMENTARY NOTATION Prepared for the U.S. Army Toxic & Hazardous Materials Agency by Roy F. Weston under a contract from, and the supervision of Argonne National Laboratory						
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)			
FIELD	GROUP	SUB-GROUP				
19. ABSTRACT (Continue on reverse if necessary and identify by block number) Roy F. Weston, Inc. has conducted a sampling and analysis program of the Army housing property located in Tappan, New York. The objectives of this sampling and analysis effort include further characterization of environmental contamination identified in an enhanced preliminary assessment carried out in 1989. The specific activities performed at this site were identification, evaluation of the condition, and collection of samples from specific suspected asbestos-containing materials, including floor tiles, pipe run and pipe fitting insulation, dust in the ductwork, and exterior siding, where present. These evaluations were necessary to clarify potential environmental issues identified in the earlier report, prior to the sale or realignment of the property. <i>Asbestos in floor tiles, pipe run, pipe fitting insulation, ducts hazardous materials, exterior siding, asbestos biphengyls, (EDD)</i>						
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS				21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED		
22a. NAME OF RESPONSIBLE INDIVIDUAL Joseph Ricci				22b. TELEPHONE (Include Area Code) (301) 671-3461		22c. OFFICE SYMBOL CETHA-BC

**SAMPLING AND ANALYSIS AT THE U.S. ARMY
FAMILY HOUSING UNIT (FHU) PROPERTY
TAPPAN, NEW YORK**

TABLE OF CONTENTS

	<u>Page</u>
LIST OF APPENDICES	ii
EXECUTIVE SUMMARY	iii
SECTION 1. INTRODUCTION	1
1.1 PURPOSE AND SCOPE	1
1.2 SITE DESCRIPTION	1
1.3 REPORT ORGANIZATION	2
SECTION 2. ASBESTOS-CONTAINING MATERIALS	3
2.1 SAMPLING RATIONALE	3
2.2 FIELD ACTIVITIES AND OBSERVATIONS	3
2.3 LABORATORY PROCEDURES AND RESULTS	4
2.4 CONCLUSIONS AND RECOMMENDATIONS	6
SECTION 3. AIRBORNE ASBESTOS ASSESSMENT	11
3.1 SAMPLING RATIONALE	11
3.2 FIELD ACTIVITIES AND OBSERVATIONS	11
3.3 LABORATORY PROCEDURES AND RESULTS	12
3.4 CONCLUSIONS AND RECOMMENDATIONS	13
SECTION 4. TRANSFORMER OILS	15
4.1 SAMPLING RATIONALE	15
4.2 SAMPLING METHODOLOGY AND OBSERVATIONS	16
4.3 CONCLUSIONS AND RECOMMENDATIONS	16
SECTION 5. SUMMARY OF FINDINGS	17

LIST OF TABLES

TABLE 2.1	BULK SAMPLE SUMMARY, TAPPAN FAMILY HOUSING	7
TABLE 2.2	ASBESTOS CONTAINING MATERIALS, TAPPAN FAMILY HOUSING	8
TABLE 3.1	RESULTS OF AIRBORNE ASBESTOS SAMPLING AND ANALYSIS ..	14

TABLE OF CONTENTS
(Continued)

LIST OF APPENDICES

APPENDIX A.	ASBESTOS-CONTAINING MATERIALS SUPPORTING DATA
A.1	FIELD DATA - ASBESTOS-CONTAINING MATERIALS
A.2	LABORATORY DATA - ASBESTOS-CONTAINING MATERIALS
APPENDIX B.	AIRBORNE ASBESTOS SUPPORTING DATA
B.1	FIELD DATA - AIRBORNE ASBESTOS
B.2	LABORATORY DATA - AIRBORNE ASBESTOS
APPENDIX C.	FIELD NOTES - TRANSFORMER EVALUATIONS



Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By _____	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

EXECUTIVE SUMMARY

The U.S. Army family housing units (FHUs) at Tappan, New York were inspected by Roy F. Weston, Inc. (WESTON) personnel during February 1990 to further evaluate certain environmental concerns. These were identified in the enhanced Preliminary Assessment reports prepared and submitted earlier by Argonne National Laboratory (ANL) for the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA). Three of the 36 single-family "Capehart" housing units were examined on 12 February to investigate the possible presence of asbestos-containing materials (ACM). The transformers were examined on 22 February 1990 to collect samples for PCB determination, if possible. An assessment of airborne asbestos exposure was performed at one unit on this property on 23 April 1990 by a WESTON Certified Industrial Hygienist (CIH), because asbestos fibers were detected in the dust deposited within the ductwork of the heating system.

The ANL Draft Sampling and Analysis Plan, Revision 1 (SAP) specified sampling the following materials, where present, which are suspected to contain asbestos, from ten per cent of the housing units or a minimum of three units, whichever is greater.

- Pipe run insulation.
- Dust accumulated inside heating ductwork within the concrete slab, where present and open.
- Vinyl floor tiles.

The WESTON personnel selected three housing units for inspection after review of maintenance records and drawings, discussions with housing management personnel, and determination that all the units were all unoccupied and in similar condition. The housing units chosen, Nos. 401, 432, and 434 were considered to be representative of the other 33 units, but this was not confirmed by an examination of all units.

Twelve dust samples and eight samples of vinyl floor tile were collected by WESTON and analyzed. These analyses revealed that asbestos is present in dust accumulated within the heating ductwork and in vinyl floor tiles at the three housing units examined. Asbestos was found in 11 of the 12 dust samples by transmission electron microscopy (TEM). Asbestos was quantified at 2% or greater by polarized light microscopy (PLM) in five of the floor tile samples and quantified at less than 1% in one sample. Asbestos was qualitatively identified in the two remaining samples of floor tile by TEM. During the asbestos sampling activity, other suspect materials observed were cementitious board around the heater exhaust flue in all the units examined.

The following practices should be observed with regard to the known and suspected asbestos-containing materials identified:

- The risks posed by the asbestos-containing dust in the ductwork cannot be clearly evaluated, because the sampling and analysis program only included a qualitative screening of this material since no approved quantitative procedure exists. Further studies, such as air sampling were recommended to determine if asbestos is becoming airborne and to define what risks, if any, are presented by these findings. These studies were subsequently performed and the findings are presented in this report.

- The vinyl floor tiles pose no significant risk as long as they are in good condition and are not damaged by excessive wear or misuse. The materials should be left in place and managed under an Operations and Maintenance (O&M) program which describes procedures for the regular inspection of the floor coverings and the removal and replacement of any that become damaged.

Samples for airborne asbestos were collected from four floor vents, one located in each of the living room, dining room, bedroom, and bathroom, in an unoccupied unit which had been inspected previously. The samples were subjected to analysis by transmission electron microscopy (TEM) to identify and quantify any asbestos fibers collected. There were no asbestos fibers found in any sample from this facility, indicating that there is no health risk at this site due to the asbestos in the ductwork.

Nine Army-owned oil-filled transformers were found at the site. Sampling of all units was attempted by the WESTON field team, using a bucket truck. Attempts were made to remove the eye bolts securing the lids to six of the devices, but the bolts were badly rusted and could not be removed without risking a spill of the transformer oil. These units were in fair condition otherwise. Examination of the other three units revealed that the bottom plates were badly rusted and discolored. This may indicate that a slight amount of oil has seeped from the seams. Sampling of these units was not attempted, due to the deteriorated condition of the housing.

All of the transformers are Westinghouse 15 KVA units, thought to be about 35 years old. They were manufactured at a time when PCB-containing insulating oils were in near universal use, and probably contain PCBs. The six transformers that are in sound condition should be assumed to contain PCBs until they are removed or the oils are sampled and analyzed. The three transformers adjacent to housing unit number 417 are in worse condition than the others. They should be examined on a regular basis to ensure that they do not leak and cause environmental damage. All nine of the devices should be labeled with the fact that they probably contain PCBs and facility records should be so noted. When the transformers are removed and replaced, they should be transported to a location where spills that may occur during sampling of the oils can easily be contained and corrected. The PCB content of the oils must be determined, after removal, and the transformers and oils disposed of according to applicable regulations.

SECTION 1. INTRODUCTION

**SAMPLING AND ANALYSIS AT THE U.S. ARMY
FAMILY HOUSING UNIT (FHU) PROPERTY
TAPPAN, NEW YORK**

SECTION 1. INTRODUCTION

Roy F. Weston, Inc. (WESTON) was retained by Argonne National Laboratory (ANL) to provide assistance in gathering additional environmental data for the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) at 53 family housing unit FHUs properties in 12 states. The Tappan, New York property is one of these FHUs.

1.1 PURPOSE AND SCOPE

The purpose of this project was to provide the Department of the Army with sound environmental data on the properties which are scheduled for sale or realignment as a result of the Defense Authorization Amendments and Base Closure and Realignment Act (Public Law 100-526). Environmental assessments of each property covered by the Act are required by the Secretary of Defense prior to their closure or realignment. Such actions must be performed in accordance with applicable provisions of the National Environmental Policy Act (NEPA) to ensure that any environmental hazards will be identified and mitigated where required.

Previously, ANL conducted enhanced preliminary assessments (PAs) for each property. These enhanced PAs made recommendations regarding sampling and analysis to determine (1) whether and in what quantities asbestos is present in certain building construction materials, including pipe run insulation, dust accumulated in heating ductwork, vinyl floor tile, and exterior siding shingles, where present; (2) in selected contexts, whether and in what concentration soils and groundwater may be contaminated; and (3) whether and in what range transformer oils at selected sites may contain polychlorinated biphenyls (PCBs). WESTON gathered this data by implementing ANL's Draft FHU Sampling and Analysis Plan, Revision 1 (SAP). Subsequent to the initial studies, WESTON, ANL, and USATHAMA decided that a follow-up effort was required to determine if asbestos fibers were becoming airborne from the dust in the heating system. This study was implemented, and samples were collected to evaluate any risks to occupants from this source.

1.2 SITE DESCRIPTION

The Department of the Army's FHU property in Tappan, New York, consists of 36 single-family housing units located on 22.75 acres, situated east of Western Highway. This FHU property is surrounded by private residential properties.

The three-bedroom "Capehart"-style single-family housing units were constructed in 1958. The single-story, wood-frame units were built on concrete slab foundations with no basements or crawl spaces. The ducts for the original heating system and domestic water lines were embedded in the concrete slab which was covered with vinyl floor tile. The units have pitched roofs surfaced with asphalt shingles and exteriors finished with vinyl siding.

1.3 REPORT ORGANIZATION

This report contains the results of the sampling and analysis program performed by WESTON. Section 2 contains a description of the asbestos sampling performed at the property and laboratory results for samples of suspected asbestos-containing material (ACM) collected. Copies of field notes and laboratory reports pertaining to asbestos are provided in Appendices A.1 and A.2, respectively. Section 3 presents a description of the field sampling activities and results of the analyses for airborne asbestos fibers. Field notes and copies of the laboratory reports for this effort are presented in Appendices B.1 and B.2, respectively. Section 4 contains a description of field activities and the findings from the transformer evaluations. Copies of field notes and supporting data for this effort are included in Appendix C. Section 5 is a summation of all activities and findings for the Tappan FHU.

SECTION 2. ASBESTOS CONTAINING MATERIALS

SECTION 2. ASBESTOS CONTAINING MATERIALS

WESTON personnel inspected three of the 36 "Capehart" units at the Tappan family housing facility on 12 February 1990 for the presence of suspected ACM. Dust accumulated within heating ductwork and vinyl floor tiles were the only suspect materials found within the buildings that were sampled. All sampling was done following the requirements of ANL's SAP. Additionally, all field work was performed in accordance with applicable Federal regulations, including 40 CFR Part 61 subpart M, 40 CFR Part 763 subpart E, and 29 CFR Part 1910.1001.

2.1 SAMPLING RATIONALE

The sampling rationale used by WESTON for this project followed the recommendations set forth by ANL. The type of suspect ACM to be sampled, the number of housing units to be examined at each FHU facility, and number of samples to be taken for each material found were described in the SAP. The plan for Tappan required sampling of the following materials, if present:

- Pipe run insulation.
- Accumulated dust inside heating ductwork if not sealed.
- Vinyl floor tiles.

In accordance with the SAP, three units were examined at this facility. The sampling plan, however, did not identify specific units which were to be sampled. The task of determining which housing units were representative of the facility as a whole and, therefore, would be sampled was left to the discretion of the WESTON field team. After reviewing all available maintenance records and drawings and discussing the facility with Directorate of Engineering and Housing (DEH) personnel, it was determined that all of the units at the Tappan FHU were similar in condition. Units 401, 432, and 434 were chosen by the WESTON field team leader as representative units to be sampled.

The SAP specifies that a minimum of two pipe run insulation samples, four dust samples, and one sample of each color of floor tile be collected from each of the housing units examined. Twelve dust samples and eight samples of vinyl floor tiles were collected at the facility. No pipe insulation samples were collected since the pipes in the units examined were not insulated.

2.2 FIELD ACTIVITIES AND OBSERVATIONS

Each of the three housing units were inspected to determine if suspect materials were present. Samples of the dust in the ductwork were collected by wiping the inner surface of the duct near the designated exhaust vents with a fiber-free wipe selected for its ability to trap dust in a non-fibrous matrix. Each wipe was placed in the jaws of a flexible small parts pick-up tool and moistened with fiber free water. If grille openings were too small, the grille was removed and the tool inserted into the duct opening. The interior surface was wiped to collect dust on the moistened surface of the wipe. After the dust was gathered, the wipe was placed in a small plastic wide-mouth jar, sealed, labeled with the sample number, and shipped to the lab. The grille was then replaced and the tool was cleaned by rinsing and wet wiping the surfaces prior to collecting the next

sample. Samples were collected from the living room, dining room, bedroom, and main bathroom in all three units.

Two colors, white and green, of 12" x 12" vinyl floor tile were sampled in each of the three housing units examined. Unit 434 also contained an underlying layer of brown and dark green floor tiles which were also sampled. One sample of each floor tile types was taken in each housing unit, resulting in a total of eight samples for laboratory determination of asbestos content. These samples were collected by breaking off a small piece of floor tile in an inconspicuous location. About one square inch of the tile surface area was taken for each sample. No effort was made to separate the mastic, which sometimes contains asbestos, from the floor tile samples themselves.

The vinyl floor tile in all three of the units inspected was in good condition. This material is considered to be a non-friable type of ACM, unless damaged. If significant damage occurs, such that the material becomes friable as defined in the asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP), the U.S. Environmental Protection Agency (EPA) would classify these tiles as friable materials. However, an EPA interpretation was recently released that changes certain previous interpretations regarding non-friable ACM. On 23 February 1990, a memorandum was issued by the Director of Emissions Standards Division, the Director of Stationary Source Compliance Division, and the Associate Enforcement Counsel for Air Enforcement of the EPA Office of Air Quality Planning and Standards (OAQPS). This memorandum was circulated to other air quality officials and EPA regional offices in early March 1990. This latest position states that floor tiles and certain other non-friable materials do not have to be removed from a facility prior to demolition, unless they are severely damaged and thus are considered friable, or unless the demolition may cause fiber release through grinding or abrasion of the tiles. Floor tile removal shall be done if demolition is to be accomplished by burning, either of the unit or of the debris from demolition. However, if the floors in the housing units are to be renovated, special care must be taken during the process to prevent the release of asbestos fibers.

The WESTON field team was directed, as a part of the project scope contained in the SAP, to perform sampling and analysis of specific suspect ACM. Other suspect materials observed were cementitious board around the heater exhaust flues. Copies of the field notes are included in Appendix A.1.

2.3 LABORATORY PROCEDURES AND RESULTS

The bulk samples of building materials were analyzed for asbestos content by WESTON's optical microscopy laboratory in Auburn, Alabama. This laboratory is accredited by the American Industrial Hygiene Association (AIHA) and the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP). The bulk samples were analyzed by Polarized Light Microscopy (PLM) using the EPA's "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA 600/M4-82-020, December 1982. Copies of the laboratory reports are included in Appendix A.2.

Vinyl floor tile samples for which no asbestos was found using PLM methods and wipe samples of dust accumulated within heating ductwork were analyzed qualitatively for the presence of asbestos by Transmission Electron Microscopy (TEM) at WESTON's NVLAP accredited electron microscopy laboratory in Auburn, Alabama. Copies of these laboratory reports are also included in Appendix A.2.

All analyses were performed in accordance with protocols set forth in the Laboratory Accreditation package submitted by WESTON under NVLAP. This document includes standard procedures for sample analysis and quality assurance / quality control (QA/QC) which were acceptable to NIST. The QA/QC protocols for the laboratory differ significantly from those commonly found in chemical analysis procedures, due to the nature of the analytical procedure. Lot blanks and sample spikes are not performed since there are no reagents, digestions, or other steps in the process that provide significant opportunities for sample contamination or analyte loss. Instead, all analyses are performed using the following steps:

- Incoming samples are divided into lots of ten for analysis.
- One sample is selected at random to serve as the QC check and divided into two containers.
- The sample lot is assigned to an analyst who determines the asbestos content of each sample.
- The QC sample is analyzed by a different analyst, designated by the sample custodian.
- The results of both analysts are submitted to the QC Coordinator for review, and comparison to the laboratory QC chart.
- The results are reviewed and approved, based on the written QC review procedures, or rejected. If rejected, the sample lot and QC sample are reanalyzed.

The WESTON laboratory routinely runs blank checks to ensure that equipment and refractive index oils are not contaminated, collects and analyzes samples of the air in the work areas to document that airborne asbestos fibers do not threaten worker health or contaminate samples, and analyzes samples submitted by NIST to document precision of results as required by the NVLAP program. Samples provided in past rounds of proficiency checks are used for analyst training and to document analyst proficiency. The use of third party laboratory comparisons is often done, and is accomplished by sending duplicates of samples to an outside laboratory and comparing the results obtained by the two facilities.

In interpreting the asbestos results, it should be noted that the definition of asbestos presence differs between the EPA and some state agencies. According to the EPA definition, any materials that contain greater than one per cent asbestos are classified as ACM by the 1977 NESHAP regulations. However, California has recently implemented state regulations that consider all materials containing 0.1 per cent or more asbestos as asbestos-containing. It is believed that several other states will soon follow the lead of California in lowering the threshold limit to 0.1 per cent, including some in which properties under review in this study are located. Currently, the State of New York continues to abide by the EPA definition, hence, all samples containing >1% asbestos are considered to be ACM.

The matter is further complicated by the fact that the PLM method was developed specifically for friable materials, but not for non-friable types of suspect ACM such as vinyl floor tiles, vinyl sheeting, and siding. In fact, no specific method has been developed and promulgated to date for such samples, so laboratories use PLM as the only available documented procedure for their analysis. PLM has an inherent limitation on fiber resolution of about 0.25 micrometer (um) in diameter and reliable detection and quantification of fibers smaller than 1 um in diameter is difficult. The manufacturing process for vinyl floor tiles, for example, results in the very small fiber diameters which often cannot be seen by PLM. WESTON's experience is that frequently such samples do, in fact, contain significant quantities of asbestos. WESTON

has developed a qualitative technique using TEM to detect the presence of such small fibers and minimize false negatives in the laboratory results. This technique, however, does not result in identification of the type of asbestos found or allow a good quantitative estimate of asbestos content.

For these reasons, the WESTON laboratories have implemented a policy of reporting asbestos presence as follows:

- Asbestos determined by PLM to be present at greater than 1% is reported as the quantity detected.
- If asbestos is estimated to be less than 1% by PLM, it is reported as <1%. This estimate of asbestos content may be made when only one asbestos structure is observed.
- If asbestos is not detected in certain non-friable materials by PLM, then the samples are subjected to TEM analysis. The results are reported as positive if asbestos is detected by TEM.

Recommendations are made based on the >1% regulatory limit, except for floor tiles as discussed earlier and as otherwise noted. However, all samples in which asbestos is detected are discussed. This represents a conservative approach to the assessment of asbestos presence at the facility.

Table 2.1 contains a summary of all samples collected at the Tappan FHU, including sample locations, material descriptions, and laboratory results. PLM results are quantitative while TEM results are qualitative. Quantity estimates for materials sampled that were suspected to contain asbestos are presented in Table 2.2. The field notes describing the observations are provided in Appendix A.1, while copies of the original laboratory reports are included as Appendix A.2.

Analytical results for the dust samples taken from the heater ductwork indicate that this dust contains some asbestos fibers. Qualitative TEM analyses revealed the presence of asbestos in 11 of 12 dust samples. At least three samples from each unit had detectable asbestos fibers. These data lead to the conclusion that asbestos is found in the dust trapped by the heating ducts.

Five of the floor tile samples were found by PLM to contain asbestos at or greater than the 2% level. One other sample was found by PLM to contain asbestos at a concentration of <1%. Two samples for which no asbestos was reported following PLM analyses were found to contain asbestos fibers by the TEM procedure. While these results are qualitative in nature, consideration of the process through which floor tiles were manufactured leads to the conclusion that these materials should be treated as ACM. Thus, all eight floor tile samples were found to contain asbestos. The 33 units not inspected should be considered to have asbestos present in the floor tiles unless additional sampling is performed and analysis shows that no asbestos is present in these units.

2.4 CONCLUSIONS AND RECOMMENDATIONS

The sample analyses performed by WESTON have revealed that asbestos is present in dust accumulated within the heating ductwork, and in the vinyl floor tiles in the three units examined. These units are thought to be representative of the other 33 at the site, but this was not confirmed by sampling all units.

TABLE 2.1
BULK SAMPLE SUMMARY
TAPPAN FAMILY HOUSING

SAMPLE IDENTIFICATION	MATERIAL TYPE	LOCATION	ASBESTOS CONTENT PLM ANALYSIS	CONFIRMATION TEM ANALYSIS
=====				
Unit 401				

BY095-08-NY-401-ATD	Dust within ductwork	Bathroom	---	Positive
BY096-08-NY-401-ATD	Dust within ductwork	Bedroom	---	Negative
BY097-08-NY-401-ATD	Dust within ductwork	Dining room	---	Positive
BY098-08-NY-401-ATD	Dust within ductwork	Living room	---	Positive
BY099-08-NY-401-AFT	White 12" x 12" floor tile	Kitchen	None Detected	Positive
BY100-08-NY-401-AFT	Green 12" x 12" floor tile	All rooms except kitchen	Chrysotile, 2%	
Unit 434				

BY101-08-NY-434-ATD	Dust within ductwork	Bathroom	---	Positive
BY102-08-NY-434-ATD	Dust within ductwork	Bedroom	---	Positive
BY103-08-NY-434-ATD	Dust within ductwork	Dining room	---	Positive
BY104-08-NY-434-ATD	Dust within ductwork	Living room	---	Positive
BY105-08-NY-434-AFT	White 12" x 12" floor tile	Kitchen	Chrysotile, <1%	
BY106-08-NY-434-AFT	Green 12" x 12" floor tile	All rooms except kitchen	Chrysotile, 5%	
BY107-08-NY-434-AFT	Brown floor tile	Bedrooms	Chrysotile, 10%	
BY108-08-NY-434-AFT	Dark green floor tile	Living room	Chrysotile, 10%	
Unit 432				

BY109-08-NY-432-ATD	Dust within ductwork	Bathroom	---	Positive
BY110-08-NY-432-ATD	Dust within ductwork	Bedroom	---	Positive
BY111-08-NY-432-ATD	Dust within ductwork	Dining room	---	Positive
BY112-08-NY-432-ATD	Dust within ductwork	Living room	---	Positive
BY113-08-NY-432-AFT	White 12" x 12" floor tile	Kitchen	None Detected	Positive
BY114-08-NY-432-AFT	Green 12" x 12" floor tile	All rooms except kitchen	Chrysotile, 5%	

TABLE 2.2
ASBESTOS CONTAINING MATERIALS
TAPPAN FAMILY HOUSING

SAMPLE IDENTIFICATION	MATERIAL TYPE	LOCATION	QUANTITY	UNITS
=====				
Unit 401				

BY095-08-NY-401-ATD	Dust within ductwork	Bathroom	N/A	
BY097-08-NY-401-ATD	Dust within ductwork	Dining room	N/A	
BY098-08-NY-401-ATD	Dust within ductwork	Living room	N/A	
BY099-08-NY-401-AFT	White 12" x 12" floor tile	Kitchen	110	Square ft
BY100-08-NY-401-AFT	Green 12" x 12" floor tile	All rooms except kitchen	790	Square ft
Unit 434				

BY101-08-NY-434-ATD	Dust within ductwork	Bathroom	N/A	
BY102-08-NY-434-ATD	Dust within ductwork	Bedroom	N/A	
BY103-08-NY-434-ATD	Dust within ductwork	Dining room	N/A	
BY104-08-NY-434-ATD	Dust within ductwork	Living room	N/A	
BY105-08-NY-434-AFT	White 12" x 12" floor tile	Kitchen	110	Square ft
BY106-08-NY-434-AFT	Green 12" x 12" floor tile	All rooms except kitchen	790	Square ft
BY107-08-NY-434-AFT	Brown floor tile	Bedrooms	365	Square ft
BY108-08-NY-434-AFT	Dark green floor tile	Living room	320	Square ft
Unit 432				

BY109-08-NY-432-ATD	Dust within ductwork	Bathroom	N/A	
BY110-08-NY-432-ATD	Dust within ductwork	Bedroom	N/A	
BY111-08-NY-432-ATD	Dust within ductwork	Dining room	N/A	
BY112-08-NY-432-ATD	Dust within ductwork	Living room	N/A	
BY113-08-NY-432-AFT	White 12" x 12" floor tile	Kitchen	110	Square ft
BY114-08-NY-432-AFT	Green 12" x 12" floor tile	All rooms except kitchen	790	Square ft

The asbestos dust accumulated within the heating ductwork represents an unusual problem, since the source of this asbestos is not readily apparent, and the quantity is not precisely known. As a conservative approach, the heating ductwork located within the concrete slab should be cleaned or permanently sealed when the units are renovated. Since the heating systems are currently operational, sealing the floor vents will require replacement with attic ducts and ceiling vents, or provision of an alternate heating source. If the ducts are cleaned, a high-powered vacuum cleaner equipped with a high-efficiency particulate air (HEPA) filter should be employed, since other vacuum cleaners are not capable of trapping all of the small asbestos fibers that may be present.

The source of the asbestos in the ducts cannot be positively determined, due to the sampling and analysis procedures employed. However, there are several potential sources, based on observations at the numerous facilities inspected during this project. Units, presumed to be the original heaters, found at other facilities frequently contained an expansion joint which served to isolate the return air plenum from the heater itself, preventing the transmission of vibrations and noise to the ductwork. The fabric-like material used to form this joint was determined, in some cases, to be chrysotile asbestos in a nearly pure form. It is possible, even likely, that the heating systems in these units had similar expansion joints which have been removed. During the 25 to 30 years that the original units were in service, erosion of these joints was likely, and could have caused asbestos fibers to accumulate in the dust.

Another possibility is that residual debris from the removal of vinyl-asbestos floor tiles, such as was found in other sites, may have been left in the ducts during floor tile removal and replacement. Conversations with the TEM analysts indicate that there was some evidence of chlorine observed during the identification of the asbestos fibers by X-ray dispersion analysis in samples from some sites. The most likely source of this element, considering the site history, is the vinyl chloride polymer which forms the floor tile matrix. However, other asbestos sources, such as debris imported into the facilities from outside activities of the occupants, cannot be ruled out.

The vinyl floor tiles in the three housing units inspected were in good condition, but, should they become broken or damaged, asbestos fibers may be released. The recent EPA clarification of the definition for damaged non-friable materials apparently removes some concerns about the status of these materials at the time of renovation or demolition. Inspection of these normally non-friable materials prior to demolition is required, but, if they are in good condition at the time, they may be left in place, if planned demolition procedures will not release a significant amount of asbestos fibers. However, if demolition will subject these non-friable materials to grinding, sanding, or abrading, or if demolition involves burning of the structure or debris from the structure, all forms of ACM, including these floor tiles, must be removed in advance.

The vinyl floor tiles should be left in place and managed under an O&M program. An O&M program must address the following:

- The locations of all known and suspected ACM.
- The procedures and frequency for periodically assessing the ACM in the facility.
- The procedures for safely handling the ACM during maintenance or removal activities.
- Designation of an asbestos coordinator for the facility.

- The responsibilities and requirements for training of personnel involved with maintenance and renovation of the facility.
- The record-keeping program for the facility.

The vinyl floor tiles should be removed during a planned renovation of the units, in accordance with the regulations applicable at the time.

Other suspect materials noted were cementitious board around the heater exhaust flues. Care should be taken during renovations or demolition to identify suspect materials that may have been hidden from the view of the assessment team. The suspect materials observed by the field team, and any hidden suspect materials found later, should be analyzed for the presence of asbestos prior to being disturbed.

SECTION 3. AIRBORNE ASBESTOS ASSESSMENT

SECTION 3. AIRBORNE ASBESTOS ASSESSMENT

Sampling for airborne asbestos fibers was performed at one unit of the Tappan, New York FHU on 23 April 1990 by WESTON. Dr. Leonard Nelms, a Certified Industrial Hygienist (CIH) visited the site and collected the samples using procedures described in the Asbestos Hazard Emergency Response Act (AHERA). These procedures were designed for verifying that clean-up of a contained area, following completion of an asbestos abatement action in public schools, was adequately performed. All samples were analyzed by TEM following the protocols specified in AHERA.

3.1 SAMPLING RATIONALE

WESTON followed the procedures and guidelines set forth during discussions among ANL, USATHAMA, and WESTON staff members, to provide a fast-track field sampling program and rapid analysis of samples collected. The urgency of this effort was driven by the finding that asbestos fibers were a component of the dust contained in the sub-slab ductwork of a number of the installations. The approach chosen required that the WESTON CIH collect four samples of air from selected heating registers, generally from one in each of the living room, kitchen, bedroom, and bathroom. Air samples were to be collected in one unoccupied unit at the site while the heating system was operating, to simulate the worst possible case for exposure of occupants. The vacant unit selected was to be one of those from which dust within ducts had been sampled during the initial investigations, where possible. If no unit that had been sampled previously was vacant at the time, another unit was to be chosen from among those available, and samples of dust from the ducts were to be collected. These samples were to be collected after completion of sampling for airborne fibers, using the procedures employed previously. Unit 432 was selected at the Tappan site, since it was vacant and had previously been sampled.

3.2 FIELD ACTIVITIES AND OBSERVATIONS

The sampling activities at this site were performed during the afternoon, on a warm spring day. The diaphragm pumps were unpacked, placed in the selected sampling locations, and turned on as soon as possible after arrival at the site to allow the mechanical components to warm up prior to checking flow rates. Since there was no floor duct in the kitchen of this unit, a sample was taken instead from the dining room vent located nearby. The heating system was turned on as soon as the pumps were in operation, to allow the air flow to stabilize, since it had not been in operation recently.

A test filter cassette, identical to those used for sample collection, was placed on the pump system being calibrated and the airflow into the filter was measured using a calibrated rotameter. This followed AHERA requirements and good industrial hygiene (IH) sampling protocols. After the pumps were calibrated, a sampling cassette made of an electrically conducting plastic was attached to the sample line, placed directly over the heating register to be sampled, and securely held in place with duct tape. The cassette contained a 25 mm diameter mixed cellulose ester (MCE) membrane filter, having a nominal pore size of 0.45 μm . The time at which sample collection was begun was recorded and the air was sampled for approximately three hours.

The pumps were operated for a length of time sufficient to draw about 1,600 liters (L) of air through each filter, based on the initial daily calibration. At the expiration of this time, the filter cassettes were removed from the heating register, inverted while the airflow continued, and lightly tapped to dislodge any

fibers that may have adhered to the cowl of the cassette. Then, the cassettes were carefully removed from the sampling pump, resealed with the plugs and end caps that are a part of the cassettes, and labeled. The flow rate of each pump was again determined by exactly the same procedure used prior to the start of sample collection. After all sampling was completed, the heating system was returned to the same condition and setting that was found on entry to the unit.

The volume of air drawn through each filter was calculated, based on the average sample flow rate and the duration of sample collection, and recorded on the cassette label. Each cassette was then sealed in a anti-static plastic zipper-seal bag and placed in a shipping carton with a custom-designed anti-static foam liner. All sampling equipment, samples and other gear were then removed from the unit and the site was secured prior to departure.

Samples were collected from the four interior locations from which dust samples had been collected previously. In addition, a field blank was prepared and a background sample of ambient outside air was taken near the northeast corner of the patio. No significant problems were encountered during the sample collection activities.

During the sampling effort, the facility was checked in an attempt to identify possible sources of asbestos that may be responsible for the fibers found in the dust. The heating system in this unit was fairly new, based on the appearance of the unit and associated ductwork. The return air register in the hall was connected to the heater by ductwork that included an expansion joint, a short section of flexible material designed to minimize or eliminate the transmission of vibrations and noise from the heating furnace to the register. This expansion joint was a black, rubber-like material that appears to have been installed when the heating system renovation was done. No evidence of the original materials was found in the unit. The cementitious board sealing the heater vent, which was noted during the initial studies, was present in the unit. Also, the vent pipe itself appeared to be a double-walled system of the type that often has fibrous insulation between the two walls.

3.3 LABORATORY PROCEDURES AND RESULTS

The four samples of air from within the unit were analyzed by WESTON's NVLAP-accredited TEM facility, using the sample preparation and analytical procedures set forth in the EPA AHERA method. A section of the exposed filter was cut from each sample and three wedges were placed on copper wire grids for TEM mounting. The samples were etched in a plasma asher, which also destroyed some of the organic materials that may have been collected, and vacuum-coated with a thin layer of carbon embedding the fibers that were on the filter surface. Each carbon-coated grid was placed in a Jaffe wick washer, in which the MCE filter matrix was dissolved and wicked away, leaving behind the carbon film containing any asbestos fibers collected. The grids were then examined and found to be ready for analysis.

Once the sample grids were prepared, each grid was examined by the TEM protocols of AHERA. A specified number of grid openings were scanned looking for fibers that may be asbestos. Typically, between six and ten grid openings had to be examined to comply with the detection limits set forth in the regulations. Whenever a fiber was observed during this examination, the microscopist examined its morphology and determined its elemental composition from the emitted X-ray spectrum. If these indicated that it may be an asbestiform mineral, the crystal lattice structure was examined by observation of its electron diffraction pattern. The fiber was then classified as non-asbestos or by the type of asbestos determined to be present during the analysis, as appropriate.

The results for the four samples from inside Unit 432 are presented in Table 3.1. No asbestos fibers were detected in any of these samples. The limit of detection for these samples ranged from 0.004 to 0.005 fibers per cubic centimeter (f/cc). Based on these findings, the background sample and field blank were not examined, since no fibers were detected inside the unit.

3.4 CONCLUSIONS AND RECOMMENDATIONS

The air samples collected indicate that fibers in the dust found within the heating system ductwork are not being released in significant quantities at this facility. The limits of detection were all at or below the acceptability limit set forth in AHERA, corresponding to 0.005 f/cc for clearance of an abatement area in a school, and were far lower than the OSHA Permissible Exposure Limit (PEL) for workers of 0.2 f/cc.

While airborne asbestos has been shown to pose a health risk to humans at high fiber concentrations, there are no definitive studies that indicate that a risk is associated with low-level exposures such as the 0.005 f/cc AHERA limit. Therefore, sampling and analysis for airborne asbestos at this site did not reveal any health risk to the occupants of the houses, based on the TEM analyses of the samples collected. However, it is recommended by the U.S. Army Environmental Hygiene Agency (AEHA) that, if the units are to remain under the management, operational control, or ownership of the Army, additional sampling and analysis for airborne asbestos be undertaken. These studies should be performed to provide data from at least ten percent or a minimum of three of the housing units, whichever is greater. This additional sampling and analysis effort, along with the other recommended actions, will help to ensure that there is no long-term exposure risk to the occupants or to maintenance personnel.

TABLE 3.1. RESULTS OF AIRBORNE ASBESTOS SAMPLING AND ANALYSIS
(ALL VALUES IN FIBERS/CC)

SAMPLE NUMBER	SAMPLE LOCATION	ASBESTOS IN DUST	ASBESTOS CONCENTRATION	ASBESTOS TYPE FOUND
TA-432-LR	Living Room	YES	ND <0.004	
TA-432-DR	Dining Room	YES	ND <0.005	
TA-432-BR	Bed Room	YES	ND <0.005	
TA-432-BA	Bath Room	YES	ND <0.005	

ND = Not Detected at the Limit of Detection Cited.

SECTION 4. TRANSFORMER OILS

SECTION 4. TRANSFORMER OILS

WESTON personnel conducted a site visit at the Tappan facility on 22 February 1990 to evaluate the potential use of polychlorinated biphenyls (PCBs) in mixtures serving as insulating oils in the existing Army-owned transformers serving the facility. A protocol was developed to address problems that were being encountered during this activity following inspection of several properties where the condition of the transformers was poor. Collection of samples from certain transformers posed an undue risk of causing environmental damage or exacerbating any that may already exist due to the age and deteriorated condition of the units. If the transformers could not be sampled safely, in the judgement of the field team leader, or if the ownership of the units was in question, the planned sample collection was abandoned and any observations made by the field team were documented.

4.1 SAMPLING RATIONALE

Electrical transformers are often filled with a dielectric liquid which increases the resistance of the unit to arcing and also acts as a heat transfer medium to cool the coils. Many transformers are filled with a chlorinated fire-resistant fluid which meets the definition established in the National Electrical Code for "askarel", the generic name for non-flammable insulating liquids used in transformers. Prior to 1979, transformer askarel typically contained 60 to 100% PCBs. Askarel transformers were made in a variety of sizes containing from three to 3,000 gallons of PCB liquid.

Three types of transformers are defined in the regulations:

- PCB Transformer: Any transformer containing 500 ppm or greater PCBs.
- PCB-Contaminated Transformer: Any transformer containing 50-499 ppm PCBs.
- Non-PCB Transformer: Any transformer containing less than 50 ppm PCBs.

Depending upon the category determined, certain regulatory requirements including recordkeeping, marking, storage, and disposal must be satisfied. Sampling of transformers is conducted to verify which of these three categories of transformers are present.

In general, the sampling protocol followed by WESTON for this project was outlined in ANL's SAP. The plan identified sites where unlabeled, Army-owned transformers were thought to be present. The types, sizes, and precise locations of the transformers were not identified in the plan. Local utility company assistance was needed to identify ownership of the transformers and to provide services necessary to de-energize the high power lines prior to sampling. The objective of this task was to sample all Army-owned transformers serving the facility. However, it was agreed that if the sampling team determined that a spill that may result in environmental damage could occur due to the intrusive effort involved, sampling was not to be attempted. In such cases, name plate information and a general description of the transformer would be obtained. The following list presents potential conditions where sampling activities would not be attempted:

- Transformers are rusted and/or in very poor condition.
- Certain transformer hardware is in poor condition (i.e. drain valves, stopcocks, lid fastening bolts etc.)

- Transformers appear to be in good condition, but access to the fluid is thwarted by bolts, wing nuts etc. that are "rusted shut".
- Transformer and/or transformer mounting pole ownership is questionable or is other than the U.S. Army.

4.2 SAMPLING METHODOLOGY AND OBSERVATIONS

Mr. Kevin Fulmer and Mr. Rick Evans of WESTON conducted the transformer evaluation activities. Mr. Tom Freeman, the DEH contact, and three personnel from the local utility company were present for support and to de-energize the high power lines. The DEH confirmed that nine transformers were Army-owned. The nine transformers are located on three utility poles, each with three transformers. One set is located on Western Highway adjacent to house number 417, one set is located between house numbers 408 and 409, and the third set is located between house numbers 432 and 433. A copy of field notes from this investigation is provided in Appendix C.

All transformers were accessed using a 40 foot bucket truck. The sampling procedure was to unscrew the lid eye bolt, remove the lid, and collect the sample. Sampling was attempted for the six transformers located between houses 408 and 409 and between houses 432 and 433. However, in all attempts, the transformer lid eye bolts were "rusted shut". All of these six transformers were in fair-to-good condition. Sampling was not attempted at the three transformers located along Western Highway. They had rusted bottoms from which oil may have seeped, as indicated by discoloration around the bottom. However, no oil drops were observed. Removal of these transformer lids was not attempted.

WESTON noted that all transformers were of the same type. A local maintenance technician stated that all transformers have been untouched since their installation approximately 35 years ago. Nameplate information was obtained from one of the transformers and follows:

Manufacturer:	Westinghouse
KVA Rating:	15
Style Number:	A2412N15C2A

4.3 CONCLUSIONS AND RECOMMENDATIONS

The nine transformers located in three banks of three transformers each were determined to belong to the U.S. Army, according to DEH personnel. The physical condition of six devices appeared to be sound, to the extent that attempted sampling of the transformer oils was deemed to present an acceptable risk. However, the condition of the threaded bolts and housings that secure the transformer components together was such that the sampling could not be performed. The transformers should be assumed to belong to the PCB-transformer category, based on their age, until a determination to the contrary is made. The condition of the three devices adjacent to house number 417 was such that the sampling could not be performed. Due to the age and condition of the transformer housings, these transformers should be closely monitored to ensure that leaks, which may cause environmental damage, do not occur. Similarly, they should also be assumed to belong to the PCB-transformer category. All nine of these transformers should be identified in facility records as possible PCB-containing devices and labelled in an appropriate manner, as long as their status is in question. When a decision is made to replace these devices with newer transformers that do not contain PCBs, they should be removed and moved to a staging area where they can be opened safely and sampled. A proper area

should be capable of containing any oils that may be spilled during the opening and sampling of the transformers until the residues can be cleaned up satisfactorily. These transformers must be tested and disposed of properly after they are removed.

SECTION 5. SUMMARY OF FINDINGS

SECTION 5. SUMMARY OF FINDINGS

Sampling and analyses performed at the Tappan, New York FHU reveal the presence of issues of concern from an environmental standpoint. These include the presence of asbestos in all eight samples of floor tile, the detection of asbestos in 11 of 12 dust samples, and the presence of transformers that may contain PCBs. No pipe insulation of any type was observed that was suspected of containing asbestos.

The risks posed by the asbestos-containing dust in the ductwork do not appear to be great since no airborne asbestos fibers were found during the follow-up study. Additional sampling and analysis for airborne asbestos at the site is recommended by AEHA, if the units are to remain under the management, operational control, or ownership of the Army. These studies should be performed to provide data from at least ten percent or a minimum of three of the housing units, whichever is greater.

The vinyl floor coverings pose no significant risk as long as they are in good condition and are not damaged by excessive wear or misuse. They should be left in place and managed under an O&M program which describes procedures for the regular inspection of the floor coverings and the removal and replacement of any that become damaged, until they are eventually removed.

Investigation of the electrical supply system at the property revealed that all nine transformers which may contain polychlorinated biphenyls (PCBs) are owned by the U.S. Army. The transformers are about 35 years old and range from fair to poor condition. Sampling was attempted from six units but could not be completed since the bolts were severely rusted and could not be removed. The other three units had visible discoloration that may indicate a slight oil leak was once present, so sampling was not attempted. However, no oil droplets were observed on these transformers when they were examined. All of these transformers should be assumed to contain PCBs, based on their age, and should be identified as probably PCB-containing in facility records and by appropriate labels. When these devices are replaced by newer, non-PCB devices, they should be moved to a secure location where they may be sampled safely to determine their final disposition. The transformers and oils must be disposed of in accordance with State and Federal regulations if they are found to contain PCBs.

APPENDIX A.1. FIELD DATA - ASBESTOS-CONTAINING MATERIALS

SITE SURVEY LOG

CLIENT Argonne National Labs WESTON WORK ORDER NO. 2104-13-01
 FACILITY/BLDG. NO. Tappan 401, New York
 FACILITY CONTACT Tom Freeman TELEPHONE NUMBER 914-359-7244
 TECHNICIAN NAME Lee Jaye SIGNATURE John L. Jaye
 TECHNICIAN NAME Art Bushy SIGNATURE Arthur M. Bushy
 TIME ARRIVED 1430 TIME DEPARTED 1500 DATE 12/02/90
 dd mm yy

SPECIFIC SITE ACTIVITIES, COMMENTS, INTERVIEW RESULTS & BRIEF DESCRIPTION OF FACILITY

The 36 units at Tappan were renovated in 1986. New roofs, aluminum siding and new forced air heating units in each. Unit 401 (3br) was empty due to fire damage two years ago. It has a pitched, shingle roof and aluminum siding. No pipe insulation was noted. Approximately 4 square feet of transite (metal sheet covering) around heater exhaust in Boiler Room.

All of the heating ducts at Tappan are constructed of Galvanized pipe & there expansion joints on the heating system are synthetic.

There are containers of something in all of the heating systems that may contain some kind of Rodent or Insect poison. The containers may have been placed in the vents to add humidity to the air, but it may be something

ACTIVITY CHECKLIST

Interviews Completed <u>✓</u>	Number of Samples <u>6</u>
Drawings Reviewed <u>✓</u>	Survey Form Completed <u>✓</u>
Drawings Attached <u>✓</u>	Site Log Completed <u>✓</u>
Visual Inspection <u>✓</u>	Chain-of-Custody Initiated <u>✓</u>
Number of Photos <u>0</u>	Exp. Assess. Form Init. <u>✓</u>
Q.A. Check <u> </u> SIGNATURE <u> </u>	DATE <u>1/ /90</u> dd mm yy

SITE SURVEY LOG

(Continued)

(Cont.)

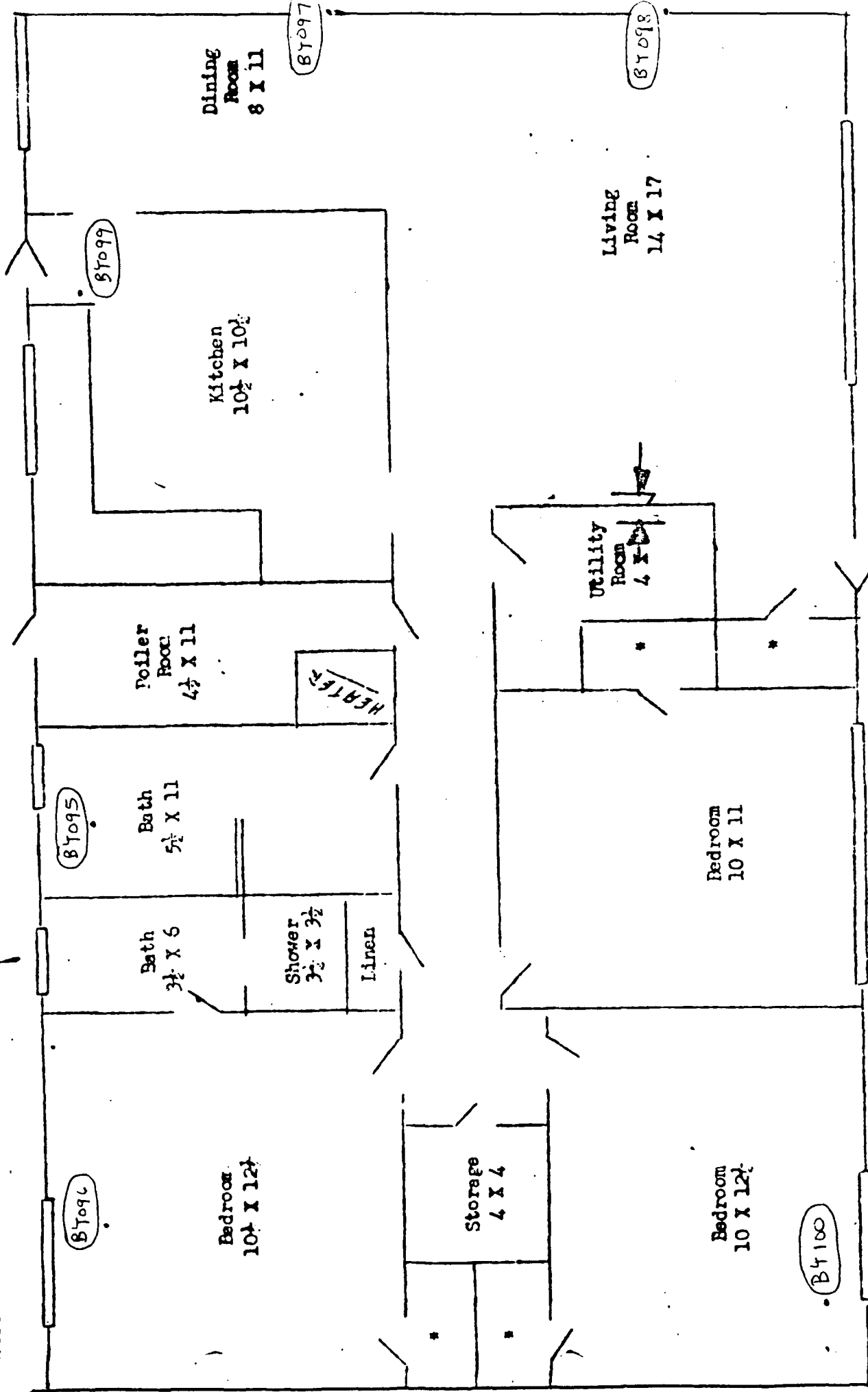
to check if the heating system is blowing
this stuff around.

Temp. was in the upper 30^s and sunny.

Tappan, New

(3 Bedroom Unit)

1A HOUSE FLOOR PLAN



SITE SURVEY LOG

CLIENT Argonne National Labs WESTON WORK ORDER NO. 2104-13-01
 FACILITY/BLDG. NO. Tappan 434, New York
 FACILITY CONTACT Tom Freeman TELEPHONE NUMBER 914-359-7244
 TECHNICIAN NAME Lee Jaye SIGNATURE Robert Jaye
 TECHNICIAN NAME Art Busby SIGNATURE Arthur M. Busby
 TIME ARRIVED 1500 TIME DEPARTED 1530 DATE 12/62/90
 FEB
 dd mm yy

SPECIFIC SITE ACTIVITIES, COMMENTS, INTERVIEW RESULTS & BRIEF DESCRIPTION OF FACILITY

Unit 434 is a 3-bedroom house with a pitched roof and aluminum siding. It has the same heating system (forced air oil fire) as the other units. No pipe insulation noted. Multiple layers of floor tile was present. 4 square feet of transite (covered by sheet metal) around heater exhaust in Boiler Room. House was occupied at the time of our inspection.

ACTIVITY CHECKLIST

Interviews Completed <u>✓</u>	Number of Samples <u>8</u>
Drawings Reviewed <u>✓</u>	Survey Form Completed <u>✓</u>
Drawings Attached <u>✓</u>	Site Log Completed <u>✓</u>
Visual Inspection <u>✓</u>	Chain-of-Custody Initiated <u>✓</u>
Number of Photos <u>0</u>	Exp. Assess. Form Init. <u>✓</u>
Q.A. Check <u> </u> SIGNATURE <u> </u>	DATE <u> / /90</u> dd mm yy

0419

DATE (dd/mm/yy): 12/^{FEB}~~02~~/90
TIME ARRIVED: 1500

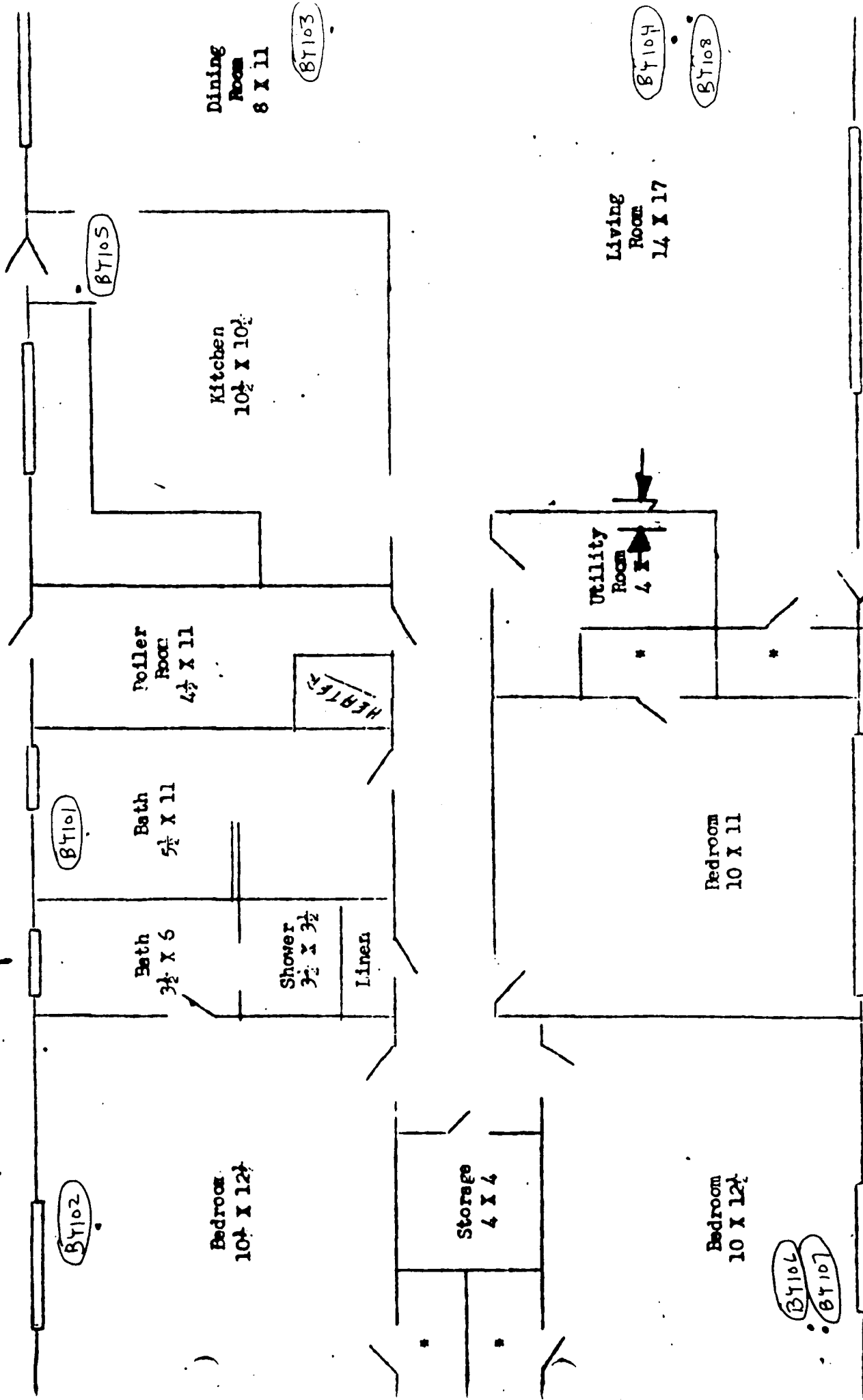
[illegible]

ROY F. WESTON, INC.

EXISTING FLOOR PLAN

(3 Bedroom Unit)

Tappan, New



TAPPAN NY BLDG # 434

SITE SURVEY LOG

CLIENT Argonne National Labs WESTON WORK ORDER NO. 2104-13-01
 FACILITY/BLDG. NO. Tappan 432 New York
 FACILITY CONTACT Tom Freeman TELEPHONE NUMBER 914-359-7244
 TECHNICIAN NAME Lee Jaye SIGNATURE Lee Jaye
 TECHNICIAN NAME Art Busby SIGNATURE Arthur M. Busby
 TIME ARRIVED 1530 TIME DEPARTED 1600 DATE 12 FEB 1990
 dd mm yy

SPECIFIC SITE ACTIVITIES, COMMENTS, INTERVIEW RESULTS & BRIEF DESCRIPTION OF FACILITY

Unit 432 is a 3-bedroom house with a pitched roof and aluminum siding. It has the newly renovated forced air-oil fire heating system. Approximately 4 square feet of transite (covered by sheet metal) around heater exhaust in Boiler Room. House was empty at the time of our inspection.

ACTIVITY CHECKLIST

Interviews Completed <u>✓</u>	Number of Samples <u>6</u>
Drawings Reviewed <u>✓</u>	Survey Form Completed <u>✓</u>
Drawings Attached <u>✓</u>	Site Log Completed <u>✓</u>
Visual Inspection <u>✓</u>	Chain-of-Custody Initiated <u>✓</u>
Number of Photos <u>0</u>	Exp. Assess. Form Init. <u>✓</u>
Q.A. Check <u> </u> SIGNATURE <u> </u>	DATE <u>1 / 90</u> dd mm yy

0423

DATE (dd/mm/yy): 12/02/90^{FEB}
TIME ARRIVED: 1530

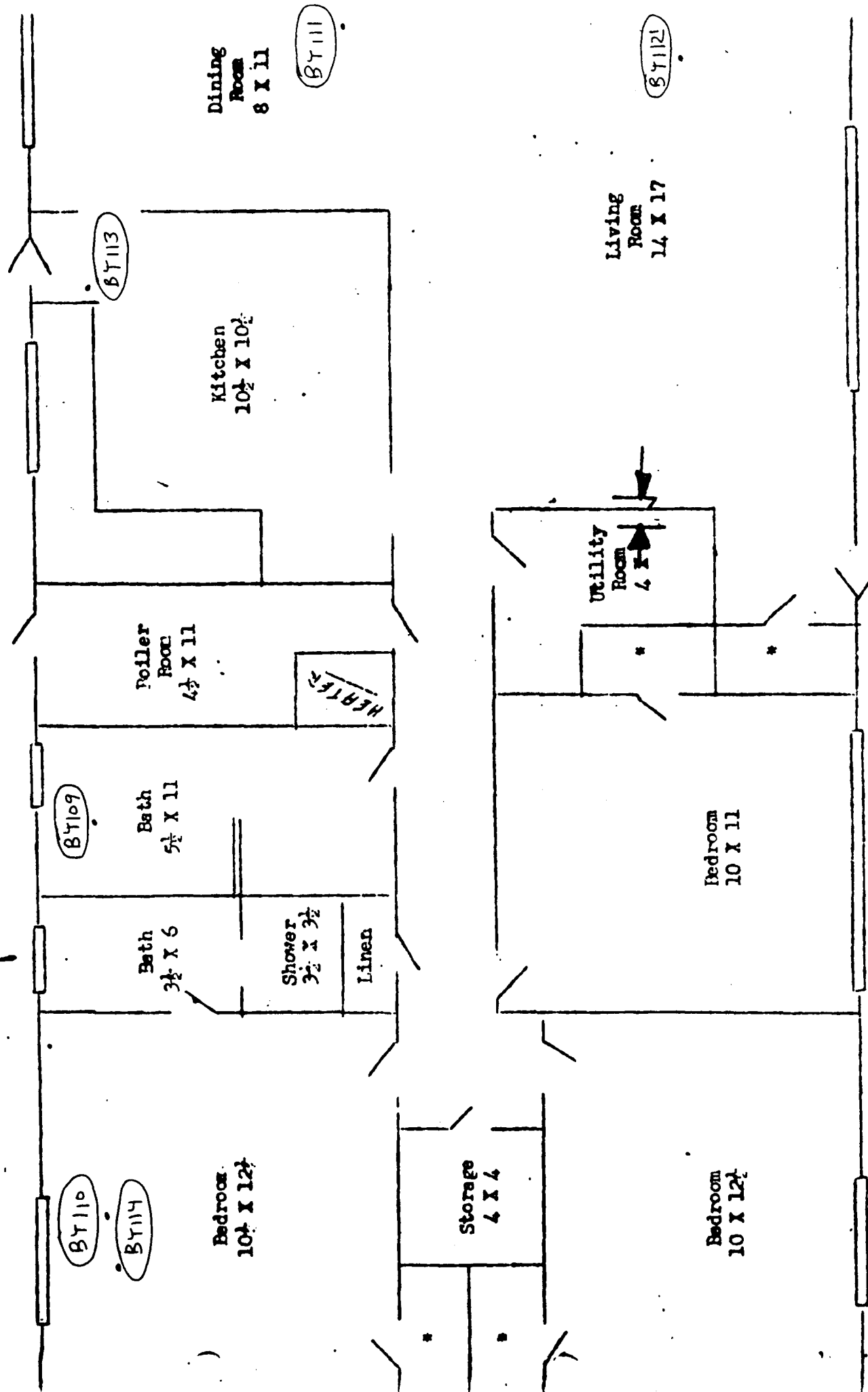
[illegible]

ROY F. WESTON, INC.

Tappan, New

(3 Bedroom Unit)

EXISTING FLOOR PLAN



TAPPAN NY BLDG # 437

APPENDIX A.2. LABORATORY DATA - ASBESTOS-CONTAINING MATERIALS

BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 2104-13-01-0000

Sample Number BY099 through Sample BY114

AO LAB ID NO	CLIENT/CLIENT ID	LOCATION	MATERIAL DESCRIPTION *	DATE RECEIVED	RESULTS **					LAYERS	ANALYST
					CH	AM	CR	OT	TL		
BY099	08-NY-401-AFT	KITCHN	NF, WH, 12X12 FT	02/15/90	ND	ND	ND	ND	ND	Yes	07323
BY100	08-NY-401-AFT	LIVNRM	NF, GR, 12X12 FT	02/15/90	2	ND	ND	ND	2	Yes	07323
BY105	08-NY-434-AFT	KITCHN	NF, WH, 12X12 FT	02/15/90	<1	ND	ND	ND	<1	Yes	06071
BY106	08-NY-434-AFT	LIVNRM	NF, GR, 12X12 FT	02/15/90	5	ND	ND	ND	5	No	06071
BY107	08-NY-434-AFT	BEDRM	NF, BR, FT	02/15/90	10	ND	ND	ND	10	No	06071
BY108	08-NY-434-AFT	LIVNRM	NF, GR, FT	02/15/90	10	ND	ND	ND	10	No	06071
BY113	08-NY-432-AFT	KITCHN	NF, WH, 12X12 FT	02/15/90	ND	ND	ND	ND	ND	No	06071
BY114	08-NY-432-AFT	LIVNRM	NF, GR, 12X12 FT	02/15/90	5	ND	ND	ND	5	No	06071

* MATERIAL DESCRIPTION	FRIABLE ¹	COLOR ²		SYSTEM ³
Friable ¹ , Color ² , System ³ , Type	F - Friable NF - Non-Friable	BK - Black BL - Blue BR - Brown GR - Green GY - Gray	RD - Red TN - Tan WH - White YL - Yellow	CHW - Chilled Water DOM - Domestic Water HHW - Heating Hot Water STM - Steam UNK - Unknown
** RESULTS				
CH - Chrysotile AM - Amosite CR - Crocidolite	OT - Other TL - Total			

Upon issue, this report may be reproduced only in full.

All analyses are performed in accordance with the methods set forth in U.S. EPA 600/M4-82-020, as amended. Weston's Optical Microscopy Laboratory is accredited by the National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program for asbestos fiber analysis (Laboratory Code 1254).



ROY F. WESTON, INC.
1635 PUMPHREY AVE.
AUBURN, AL 36830
PHONE: (205) 826-6100
FAX: (205) 826-8232

Transmission Electron Microscopy Asbestos Summary Report

Client: Argonne National Laboratories Weston W.O. No.: 2104-13-01-0000

Sample Type(s): Dust and Floor Tiles Sampling Location: Tappan

QUALITATIVE ANALYSIS

FLOOR TILES: A 0.5 to 2.0 gram portion of each floor tile sample was ultrasonically disaggregated in four milliliters of deionized, 0.2 μ m membrane filtered water. After the coarse fraction settled, a drop of the suspended, clay-sized fraction was placed on a Formvar coated 200 mesh Cu TEM grid and allowed to dry. The grid was carbon coated for thermal stability in the electron beam and examined with a Philips CM12 transmission electron microscope operating at 120 kilovolts accelerating voltage.

DUST WIPE SAMPLES: A generous loading of dust was collected on a pre-wetted, 25 square centimeter section of a cleanroom wipe. The wipe was placed in a two ounce wide mouth collection vial and returned to the laboratory. Ten to fifteen milliliters of filtered, deionized water was added to suspend the dust. The suspension was ultrasonically dispersed and the coarse fraction was allowed to settle. A drop of the suspension was placed on a Formvar coated 200 mesh Cu TEM grid and allowed to dry. The grid was carbon coated as above and examined by transmission electron microscopy at 120 kilovolts accelerating voltage.

ANALYTICAL RESULTS

SAMPLE IDENTIFICATION

RESULTS

BY095-08-NY-401-ATD	Positive
BY096-08-NY-401-ATD	Negative
BY097-08-NY-401-ATD	Positive
BY098-08-NY-401-ATD	Positive
BY099-08-NY-401-AFT	Positive
BY101-08-NY-434-ATD	Positive



ROY F. WESTON, INC.
1635 PUMPHREY AVE.
AUBURN, AL 36830
PHONE: (205) 826-6100
FAX: (205) 826-8232

ANALYTICAL RESULTS
(continued)

SAMPLE IDENTIFICATION

RESULTS

BY102-08-NY-434-ATD
BY103-08-NY-434-ATD
BY104-08-NY-434-ATD
BY109-08-NY-432-ATD
BY110-08-NY-432-ATD
BY111-08-NY-432-ATD
BY112-08-NY-432-ATD
BY113-08-NY-432-AFT

Positive
Positive
Positive
Positive
Positive
Positive
Positive
Positive

(Approved for Transmittal)

3/20/90
(Date)

- * This test report relates only to the specific items tested.
- ** These sample results may only be reproduced in full, and are valid only if approved for transmittal.

APPENDIX B.1. FIELD DATA - AIRBORNE ASBESTOS

AIR MONITORING DATA

CLIENT Argonne Nat'l Lab WORKER ORDER NUMBER 2104-13-02
 PROJECT LOCATION Tappan NY - Unit 432
 WORK AREA ID NO. _____ SAMPLE NO. TA-432-LR

SAMPLE TYPE

☐ PERSONNEL

NAME _____

TASK _____

☒ AMBIENT

☐ WORK AREA

☐ ADJACENT ROOM

☐ BACKGROUND

☒ OTHER Living Room Vent

☐ CLEAN ROOM

☐ AFD EXHAUST

☐ CLEARANCE

☐ INITIAL

☐ FINAL REOCCUPANCY

☐ OTHER _____

☐ TWA SAMPLE

(SEE ADDITIONAL SHEETS)

SAMPLE DATA

Filter area (FA) mm

855

☒ 385

PUMP ID

82

PUMP Cal Initial

98

10.2

10.6

PUMP Cal Final

10

11.0

1670

1354

1632

158

L. Velms

Technician

23 Apr '90

Date

ANALYTICAL DATA

ANALYST _____

Scope ID _____

Microscopic Field Area (MFA) mm²

Date/Time Mounted _____

Date/Time Counted _____

Total Fibers Counted _____

Total Fields Counted _____

Average Count _____

Blank Count _____

Blank Corrected Count (BCC) _____

Fiber Density _____

Detection Limit (DL) _____

Concentration (C) _____

C

(BCC)/(FA)

(VA)/(MFA)(1000)

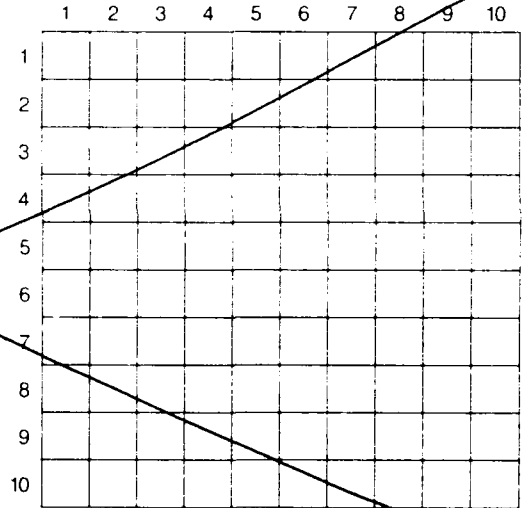
DL

10 fibers 100 fields

The above-reported results were obtained when the sample was counted in accordance with NIOSH 7400

Signature _____

Date _____



NOTES SKETCHES REMARKS

TEM see Print.

CLIENT Argonne Nat'l Lab WORKER ORDER NUMBER 2104-13-02
PROJECT LOCATION Tappan NY - Unit 432
WORK AREA ID NO. _____ SAMPLE NO. TA-432-DR

SAMPLE TYPE

PERSONNEL

NAME _____

TASK _____

☒ AMBIENT

WORK AREA
ADJACENT ROOM
BACKGROUND

☒ OTHER Dining Room Vent

CLEAN ROOM
AFD EXHAUST

CLEARANCE

INITIAL
FINAL REOCCUPANCY

OTHER _____

TWAS SAMPLE _____

SAMPLE DATA

FIELD NO. FAI _____

PUMP ID _____

PUMP Ca Initial

PUMP Ca Final

1353 1629 156

L. Nelms 23 Apr '90

ANALYTICAL DATA

ANALYST _____

SCOUT _____

Microscopic Field Area (MFA) _____

EXPOSURE METHOD _____

EXPOSURE COUNT _____

APPROXIMATE _____

APPROXIMATE DIRECTION _____

APPROXIMATE _____

C (BCC) (FA)
(VA) (MFA) (1000)

DL 10 fibers 100 fields

The above-reported results were obtained when the sample was counted in accordance with NIOSH 7400

Signature _____

Date _____

	1	2	3	4	5	6	7	8	9	10
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

NOTES SKETCHES REMARKS

TEM

CLIENT Argonne Nat'l LabWORKER ORDER NUMBER 2104-13-02PROJECT LOCATION Tappan NY - Unit 432

WORK AREA ID NO. _____

SAMPLE NO. TA-432-BR

SAMPLE TYPE

☐ PERSONNEL

NAME _____

TASK _____

☒ AMBIENTWORK AREA
ADJACENT ROOM
BACKGROUND
OTHER Bed Room VentCLEAN ROOM
AFD EXHAUST☐ CLEARANCEINITIAL
FINAL REOCCUPANCY

OTHER _____

TWA SAMPLE

SEE ADDITIONAL SHEETS

SAMPLE DATA

PUMP ID 97

PUMP Ca Initia

PUMP Ca Fina

1356 1630 154L. Nelms23 Apr. '90

ANALYTICAL DATA

ANALYST _____

Microscopic Field Area (MFA)

Microscopic Field Area (MFA)

Total Fibers Counted

Total Fibers Counted

Total Fibers Counted

Total Fibers Counted

Blank Count

Blank Count

Fiber Count

Fiber Count

Concentration

Concentration

C (BCC)(FA)

(VA)(MFA)(1000)

DL 10 fibers 100 fields

The above-reported results were obtained when the sample was counted in accordance with NIOSH 7400

Signature _____

Date _____

	1	2	3	4	5	6	7	8	9	10
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

NOTES SKETCHES REMARKS

TEM

CLIENT Argonne Nat'l Lab WORKER ORDER NUMBER 2104-13-02
PROJECT LOCATION Tappan NY - Unit 432
WORK AREA ID NO _____ SAMPLE NO TA-432-BA

SAMPLE TYPE

PERSONNEL

NAME

DATE

☒ AMBIENT

WORK AREA

ADJACENT ROOM

BATHROOM

☒ OTHER Bathroom Vent

CLEAN ROOM

AIR EXHAUST

CLEARANCE

INITIAL

FINAL RECOVERY

OTHER

TWO SAMPLES

SAMPLE DATA

FLOW ID

FLOW RATE

FLOW RATE

1355 1633 158

L. Nelms

23 Apr '90

99

15

10.2

10.0

16

9.9

1590

ANALYTICAL DATA

ANALYST

DATE

TIME

TIME

TIME

TIME

TIME

TIME

TIME

TIME

TIME

TIME

TIME

TIME

TIME

TIME

TIME

TIME

TIME

TIME

TIME

TIME

TIME

TIME

TIME

TIME

TIME

NOTES SKETCHES REMARKS

TEM

AIR MONITORING DATA

CLIENT Argonne Nat'l Lab WORKER ORDER NUMBER 2104-13-02
 PROJECT LOCATION Tappan NY - Unit 432
 WORK AREA ID NO. _____ SAMPLE NO. TA-432-047

SAMPLE TYPE

☐ PERSONNEL ☒ AMBIENT
 NAME _____ WORK AREA _____ CLEAN ROOM _____
 TASK _____ ADJACENT ROOM _____ AFD EXHAUST _____
☒ BACKGROUND _____ CLEARANCE _____
 OTHER _____ TWA SAMPLE _____
 (SEE ADDITIONAL SHEET)

SAMPLE DATA

Filtering Pump (FA) mmHg _____ ☒ No C
 PUMP ID 78 1343 1637 174
 PUMP Cal Initial 15 9.2 9.0 L. Nelms 23 Apr '90
 PUMP Cal Final 16 8.9 1570 Test No.

ANALYTICAL DATA

ANALYST _____
 Scope (mm) _____ Microscope Field Area (MFA) _____
 Date Time Mounted _____ Date Time Counted _____
 Total Fibers Counted _____ Total Fields Counted _____
 Area (mm²) _____ Block Count _____
 Block Count (BCC) _____ Fiber Density _____
 Date (mm/dd/yyyy) _____ Concentration (cf) _____
 C (BCC)(FA) _____ DL 10 fibers 100 fields
 (VA)(MFA)(1000) _____
 The above-reported results were obtained when the sample was
 counted in accordance with NIOSH 7400
 Signature _____ Date _____

	1	2	3	4	5	6	7	8	9	10
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

NOTES SKETCHES REMARKS

TEM

CLIENT Argonne Nat'l Lab
PROJECT LOCATION Tappan NY
WORK AREA ID NO. _____

WORKER ORDER NUMBER 2104-13-02

PROJECT LOCATION. Tappan NY - Unit 432

WORK AREA ID NO

SAMPLE NO TA-432-FB

SAMPLE TYPE		PERSONNEL		NAME		TITLE																																																																																																																										
		<input checked="" type="checkbox"/> AMBIENT <input type="checkbox"/> WORK AREA <input type="checkbox"/> ADJACENT ROOM <input type="checkbox"/> BACKUP <input type="checkbox"/> OTHER		<input type="checkbox"/> CLEAN ROOM <input type="checkbox"/> AND EXHAUST		CLEARANCE INITIAL FINAL OTHER																																																																																																																										
		<div style="font-size: 2em; font-weight: bold;">Field Blank</div>																																																																																																																														
SAMPLE DATA				1344		1638																																																																																																																										
						174																																																																																																																										
PLANT		None		L. Nelms		23 Apr. '90																																																																																																																										
PLANT ROOM		N/A																																																																																																																														
PLANT ROOM		N/A																																																																																																																														
ANALYTICAL DATA																																																																																																																																
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>ANALYST</p> <p>DATE</p> <p>TIME</p> <p>LOCATION</p> <p>INSTRUMENT</p> <p>REMARKS</p> <p>DL 10 fibers/100 fields</p> <p>Stk. at reported results were obtained when the sample was with a clearance with NIOSH 7400</p> </div> <div style="width: 35%;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> <th>9</th> <th>10</th> </tr> </thead> <tbody> <tr><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>6</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>7</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>8</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>9</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>10</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table> </div> </div>									1	2	3	4	5	6	7	8	9	10	1											2											3											4											5											6											7											8											9											10										
	1	2	3	4	5	6	7	8	9	10																																																																																																																						
1																																																																																																																																
2																																																																																																																																
3																																																																																																																																
4																																																																																																																																
5																																																																																																																																
6																																																																																																																																
7																																																																																																																																
8																																																																																																																																
9																																																																																																																																
10																																																																																																																																
NOTES SKETCHES REMARKS																																																																																																																																
<div style="font-size: 2em; font-weight: bold;">TEM</div>																																																																																																																																

FIELD NOTES FOR TAPPAN, NEW YORK SITE

The Tappan, New York family housing units are typically single-story, slab-on-grade, single-family dwellings with asphalt shingle roofs and vinyl exterior siding. The site tested was Unit 432. This unit is a three-bedroom unit that appears to be typical of the other units at this project. The unit has two full baths, one with a tub and one a shower. The entire unit, with the exception of a pantry type storage closet and the mechanical room, is covered with floor tile except for the two bathrooms which have ceramic tile. The floor tile which predominates in all rooms except the kitchen is a light olive green mottled floor tile. The floor tile in the kitchen itself is a tan 12"x12" floor tile with white and black mottling. No evidence of other potential'y asbestos-containing materials was noted within this facility. The heating unit was oil-fired and appears to be of recent vintage. It seemed to have been installed quite some time after the original unit was constructed based on the sheet metal in the plenum chamber. This unit has an expansion joint which is the black rubber-like material, not the woven asbestos-type material observed in many other units. There was a board around the flue which possibly is a Transite[®] type material, however it could be hardboard type. The metal flues for the both furnace and the water heater appear to be possibly Metalbestos units or similar types which are doublewalled with asbestos or other insulation lining. The inspection did not permit access to the material in these units so it could not be determined whether it was or was not asbestos. There were no other issues in the housing itself. Samples were collected from the same four interior vents as were sampled previously for dust. These included the rear bedroom, the full bath with a tub, the living room on the end wall, and the dining room vent also on the end wall. An outside sample was collected near the northeast corner of the block patio. These samples were collected simultaneously on the afternoon of 23 April 1990. All pumps appeared to function well and calibrations were reasonably close at the end as compared to the initial calibrations.

APPENDIX B.2. LABORATORY DATA - AIRBORNE ASBESTOS



ROY F. WESTON, INC.
1635 PUMPHREY AVE.
AUBURN, AL 36830
PHONE: (205) 826-6100
FAX: (205) 826-8232

TRANSMISSION ELECTRON MICROSCOPY
ASBESTOS ANALYSIS REPORT

Client: ARGONNE
Client Sample ID: TA-432-LR

Weston W.O. No.: 2104-13-02-0000
Weston Sample ID No.: EE969

Received by: Beth Hiltbold
Analyzed by: Greg Hall

Date Received: 04/25/90
Date Analyzed: 04/27/90

Filter Type: 0.45 μ m, 25 mm, MEC
Number of Grids Examined: 2
Average Grid Square Area: 0.0088 mm²
Sample Volume: 1670.0 liters
EPA Analysis: AHERA

Filter Area: 385 mm²
Number of Grid Squares Examined: 6
Total Area Examined: 0.0528 mm²
Detection Limit: 0.004 fibers/cc
Grid Archive No.: 0227-A-6,7

ANALYTICAL RESULTS

	<u>Chrysotile</u>		<u>Amphiboles</u>		<u>Ambiguous</u>	<u>Non-Asbestos</u>
	<u><5μm</u>	<u>\geq5μm</u>	<u><5μm</u>	<u>\geq5μm</u>		
Number of Fibers Analyzed:	0	0	0	0	0	0
Number of Bundles Analyzed:	0	0	0	0	0	0
Number of Clusters Analyzed:	0	0	0	0	0	0
Number of Matrices Analyzed:	0	0	0	0	0	0

SUMMARY

Concentration of Asbestos Structures < 5 μ m in length: ND (structures/cc)
Concentration of Asbestos Structures \geq 5 μ m in length: ND (structures/cc)
Concentration of Asbestos Structures < 5 μ m in length: ND (structures/mm²)
Concentration of Asbestos Structures \geq 5 μ m in length: ND (structures/mm²)
Total Concentration of Asbestos Structures ND (structures/cc)
Total Concentration of Asbestos Structures ND (structures/mm²)

Comments:


(Approved for Transmittal)

April 30, 1990
(Date)

This test report relates only to the specific items tested.



ROY F. WESTON, INC.
1635 PUMPHREY AVE.
AUBURN, AL 36830
PHONE: (205) 826-6100
FAX: (205) 826-8232

TRANSMISSION ELECTRON MICROSCOPY
ASBESTOS ANALYSIS REPORT

Client: ARGONNE
Client Sample ID: TA-432-DR

Weston W.O. No.: 2104-13-02-0000
Weston Sample ID No.: EE970

Received by: Beth Hiltbold
Analyzed by: Greg Hall

Date Received: 04/25/90
Date Analyzed: 04/27/90

Filter Type: 0.45 μ m, 25 mm, MEC
Number of Grids Examined: 2
Average Grid Square Area: 0.0088 mm²
Sample Volume: 1580.0 liters
EPA Analysis: AHERA

Filter Area: 385 mm²
Number of Grid Squares Examined: 6
Total Area Examined: 0.0528 mm²
Detection Limit: 0.005 fibers/cc
Grid Archive No.: 0227-A-9,10

ANALYTICAL RESULTS

	<u>Chrysotile</u>		<u>Amphiboles</u>		<u>Ambiguous</u>	<u>Non-Asbestos</u>
	<u><5μm</u>	<u>\geq5μm</u>	<u><5μm</u>	<u>\geq5μm</u>		
Number of Fibers Analyzed:	0	0	0	0	0	0
Number of Bundles Analyzed:	0	0	0	0	0	0
Number of Clusters Analyzed:	0	0	0	0	0	0
Number of Matrices Analyzed:	0	0	0	0	0	0

SUMMARY

Concentration of Asbestos Structures < 5 μ m in length: ND (structures/cc)

Concentration of Asbestos Structures \geq 5 μ m in length: ND (structures/cc)

Concentration of Asbestos Structures < 5 μ m in length: ND (structures/mm²)

Concentration of Asbestos Structures \geq 5 μ m in length: ND (structures/mm²)

Total Concentration of Asbestos Structures ND (structures/cc)

Total Concentration of Asbestos Structures ND (structures/mm²)

Comments:


(Approved for Transmittal)

April 30, 1990
(Date)

This test report relates only to the specific items tested.



ROY F. WESTON, INC.
1635 PUMPHREY AVE.
AUBURN, AL 36830
PHONE: (205) 826-6100
FAX: (205) 826-8232

TRANSMISSION ELECTRON MICROSCOPY
ASBESTOS ANALYSIS REPORT

Client: ARGONNE
Client Sample ID: TA-432-BR

Weston W.O. No.: 2104-13-02-0000
Weston Sample ID No.: EE971

Received by: Beth Hiltbold
Analyzed by: Barry Rayfield

Date Received: 04/25/90
Date Analyzed: 04/27/90

Filter Type: 0.45 μ m, 25 mm, MEC
Number of Grids Examined: 2
Average Grid Square Area: 0.0088 mm²
Sample Volume: 1580.0 liters
EPA Analysis: AHERA

Filter Area: 385 mm²
Number of Grid Squares Examined: 6
Total Area Examined: 0.0528 mm²
Detection Limit: 0.005 fibers/cc
Grid Archive No.: 0227-B-7,8

ANALYTICAL RESULTS

	<u>Chrysotile</u>		<u>Amphiboles</u>		<u>Ambiguous</u>	<u>Non-Asbestos</u>
	<u><5μm</u>	<u>\geq5μm</u>	<u><5μm</u>	<u>\geq5μm</u>		
Number of Fibers Analyzed:	0	0	0	0	0	0
Number of Bundles Analyzed:	0	0	0	0	0	0
Number of Clusters Analyzed:	0	0	0	0	0	0
Number of Matrices Analyzed:	0	0	0	0	0	0

SUMMARY

Concentration of Asbestos Structures < 5 μ m in length: ND (structures/cc)
Concentration of Asbestos Structures \geq 5 μ m in length: ND (structures/cc)
Concentration of Asbestos Structures < 5 μ m in length: ND (structures/mm²)
Concentration of Asbestos Structures \geq 5 μ m in length: ND (structures/mm²)
Total Concentration of Asbestos Structures ND (structures/cc)
Total Concentration of Asbestos Structures ND (structures/mm²)

Comments:


(Approved for Transmittal)

April 30, 1990
(Date)

This test report relates only to the specific items tested.



ROY F. WESTON, INC.
1635 PUMPHREY AVE.
AUBURN, AL 36830
PHONE: (205) 826-6100
FAX: (205) 826-8232

TRANSMISSION ELECTRON MICROSCOPY
ASBESTOS ANALYSIS REPORT

Client: ARGONNE
Client Sample ID: TA-432-BA

Weston W.O. No.: 2104-13-02-0000
Weston Sample ID No.: EE972

Received by: Beth Hiltbold
Analyzed by: Barry Rayfield

Date Received: 04/25/90
Date Analyzed: 04/27/90

Filter Type: 0.45 μ m, 25 mm, MEC
Number of Grids Examined: 2
Average Grid Square Area: 0.0088 mm²
Sample Volume: 1590.0 liters
EPA Analysis: AHERA

Filter Area: 385 mm²
Number of Grid Squares Examined: 6
Total Area Examined: 0.0528 mm²
Detection Limit: 0.005 fibers/cc
Grid Archive No.: 0227-C-6,7

ANALYTICAL RESULTS

	<u>Chrysotile</u>		<u>Amphiboles</u>		<u>Ambiguous</u>	<u>Non-Asbestos</u>
	<u><5μm</u>	<u>\geq5μm</u>	<u><5μm</u>	<u>\geq5μm</u>		
Number of Fibers Analyzed:	0	0	0	0	0	0
Number of Bundles Analyzed:	0	0	0	0	0	0
Number of Clusters Analyzed:	0	0	0	0	0	0
Number of Matrices Analyzed:	0	0	0	0	0	0

SUMMARY

Concentration of Asbestos Structures < 5 μ m in length: ND (structures/cc)

Concentration of Asbestos Structures \geq 5 μ m in length: ND (structures/cc)

Concentration of Asbestos Structures < 5 μ m in length: ND (structures/mm²)

Concentration of Asbestos Structures \geq 5 μ m in length: ND (structures/mm²)

Total Concentration of Asbestos Structures ND (structures/cc)

Total Concentration of Asbestos Structures ND (structures/mm²)

Comments:


(Approved for Transmittal)

April 30, 1990
(Date)

This test report relates only to the specific items tested.

APPENDIX C. FIELD NOTES - TRANSFORMER EVALUATIONS

Frances Proctor

Amman Sable 1-800-548-1993 X 4057

(V)

~~CLEMENT~~

- 6 Transformers in Fair condition
- Probably OK to sample
- Abandoned & need entry through chains

Frances Proctor - 4 30

no calls

2-16-90

Tony Pierre

- Returned his phone call
- Scheduled Trapping for 10.00 AM on Tuesday Feb 20, 1
- Spring valley on the 22nd (10:00 AM)
- Manitowish Beach & Rocky Point on Friday
- Need to be at Manitowish Beach at 10:00 AM

Mike Pine

- Called Mike (he was not there)
- Left a message with his Secretary that Wednesday is the only one open to schedule Ludwigson & Franklin Lake

Gulen Rentals

- Open by 7:15; reserved



FEB 20, 1990

Arrived in Tappan with Bucket truck at 10:15 am. Two military base workers told me that Tappan was scheduled for the 22nd. I told the workers that Tony Pierro scheduled it for Tuesday the 20th. I even showed log book documentation. They told me to wait ~ 1/2 hr. until their boss Freeman gets back.

Tony Pierro

- called in distly but busy
- called - let him know of the problem

Tom Freeman

- Told me that the land power company cancelled for the 20th
- 10:00 AM - Tappan - Thursday
- 22nd Friday 23rd
- 10:10 AM - Wednesday - Spring Valley
- No one got back to me to cancel

Tony Pierro

- Rocky point Wednesday
- Manhattan Beach Monday
- Also let me know that it was their fault

Mike Prino

- JPL may have a problem with us sampling these folks

- he is for

Don
- called transp.

Bob I-
- Return

ROCKY

9:00 Arrived

9:30 Two people site gr truck

10:20 3 people electric company said they need to line

- Westo Evans

FEBRUARY 22, 1990

TAPPAN

0850 - Arrived at the site. Evans & Fulmer to check electrical hazards & Go over Sampling strategy.

TALKED TO AN ARMY WORKER AND DREW A MAP TO THE NEAREST HOSPITAL. THE MAP WILL BE POSTED!

0930 - Power company arrival and closed the cut-outs.

1000 - RICK EVANS WAS DRESSED in SARANEX suit, nitrile Gloves, latex booties, and a face shield. He went up to the first ~~MA~~ set of three transformers between house # 408 and 409. Rick found an eye bolt on the top which wasn't easily unscrewed. He tried again with a pipe wrench & a hammer & still wouldn't loosen.

1025 - SAME RESULT WAS TRIED WITH THE third second set of three transformers outside of house # 32.

1100 - On the third set of three transformers, before Rick reached the top he noticed that all of them had rusted bottoms and apparently slow seepage. We did not elect

to be
the mounted
10 and 12
identified
has a

where they
electricity,
out of
they had
(Delay)

ILCO
are not
lay.

day. TRAVEL

6-1929

not

st

Freeman (914) 359-7244

to try to remove the lid.

EE

Information gathered

From
transformers

- Rating - 15 KVA

- Westinghouse style # - A24 12N15C2A

- All appear to be the same

- IT was also stated by the local
maintenance (Army) technician, who has
been here since 1965, that the transformers
have been there since ~ 35 yrs ago &
haven't been touched since

- Collected more pictures

12:55 Power Company reset the cut-outs.
We inspected the transformers afterwards,
no problems noted.

1:00 - Drove to Spring Valley to check
out their transformers. The three
transformers appear to be the same
type as with Tappan.

CALL TO LEAN NEUMS

He gave me these instructions:

- ① Do not RISK spills
- ② Document why transformers
cannot be sampled
- ③ Do not allow power company's or
anyone else postpone sampling for
greater than one day.
- ④ Collect wire samples if find
leaking transformers

0900 Arrive

1000 Army
arrive
the po
may b

10:15 Collec
tes

~~ARSSA~~
NONE

Terak. MIKE
(Front
LivingS
1st flr
old

Alex
- TULL

Tony
Busz

Freem
Burr

Tony
Nort